

In the Claims:

1. (currently amended) A method for pressing an object with a main piston placed in a main cylinder by means of applying a prescribed pressure to said main piston with working fluid wherein:

said working fluid is compressed to said prescribed pressure by supplying said working fluid to said main cylinder with driving power of a piezoelectric ~~element.~~  
element.

said prescribed pressure is applied through a piping system that includes said main cylinder, a supply line and a discharge line of said working fluid with respect to said main cylinder, a check valve preventing reverse flow of said working fluid from said main cylinder to said supply line, and a sub-cylinder provided within said supply line,

said method comprises:

a first step of displacing a sub-piston provided within said sub-cylinder from an initial position to press said working fluid such that said working fluid is introduced via said check valve to said main cylinder to displace said main piston provided within said main cylinder; and

a second step of causing said sub-piston to return to said initial position such that said working fluid is supplied to said sub-cylinder,

25 said first step and said second step are repeated  
26 successively until a pressure of said working fluid in said  
27 main cylinder reaches said prescribed pressure,

28 said first step is performed in a state in which a  
29 discharge control valve disposed in said discharge line and  
30 a supply control valve disposed in said supply line are  
31 closed,

32 said second step is performed in a state in which said  
33 discharge control valve and said check valve are closed and  
34 said supply control valve is open,

35 said supply control valve, said discharge control  
36 valve and said sub-piston each respectively have a  
37 respective said piezoelectric element attached thereto, and

38 said piezoelectric elements serve to open and close  
39 said supply control valve and said discharge control valve,  
40 and to displace said sub-piston from the initial position,  
41 respectively.

- 1 2. (currently amended) The pressing method according to  
2 claim 1, wherein a prescribed voltage is applied to said  
3 piezoelectric element attached to said sub-piston  
4 repeatedly until the pressure of said working fluid reaches  
5 to said prescribed pressure.

Claims 3 to 5 (canceled).

1 6. (currently amended) The pressing method according to  
2 ~~claim 3~~ claim 1, wherein

3 a detector provided in said main cylinder detects the  
4 pressure of said working fluid, and

5 when said detector detects said prescribed pressure,  
6 the displacement of said sub-piston is terminated.

Claims 7 to 17 (canceled).

1 18. (new) A method of pressing an object using an apparatus  
2 including a pressing piston device, a fluid supply line  
3 connected to a fluid inlet of said pressing piston device  
4 and adapted to supply a working fluid, a piezoelectrically  
5 actuated supply control valve interposed in said fluid  
6 supply line, a piezoelectrically actuated pump connected to  
7 or interposed in said fluid supply line between said supply  
8 control valve and said fluid inlet of said pressing piston  
9 device, a one-way check valve interposed in said fluid  
10 supply line between said pump and said fluid inlet of said  
11 pressing piston device, a fluid discharge line connected to  
12 a fluid outlet of said pressing piston device and adapted  
13 to discharge the working fluid from said pressing piston  
14 device, and a piezoelectrically actuated discharge control  
15 valve interposed in said fluid discharge line, wherein said  
16 method comprises the steps:

17 a) closing said check valve, electrically controlling  
18 said piezoelectrically actuated discharge control  
19 valve so as to be in a closed state thereof, and

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20 electrically controlling said piezoelectrically  
21 actuated supply control valve so as to be in an open  
22 state thereof;

23 b) with said check valve closed, said discharge control  
24 valve in said closed state thereof and said supply  
25 control valve in said open state thereof, electrically  
26 controlling said piezoelectrically actuated pump to  
27 draw the working fluid through said supply control  
28 valve into said pump;

29 c) after said step b), electrically controlling said  
30 piezoelectrically actuated discharge control valve so  
31 as to be in said closed state thereof, and  
32 electrically controlling said piezoelectrically  
33 actuated supply control valve so as to be in a closed  
34 state thereof;

35 d) with said discharge control valve in said closed state  
36 thereof and said supply control valve in said closed  
37 state thereof, electrically controlling said  
38 piezoelectrically actuated pump so as to pressurize  
39 the working fluid in said pump, thereby opening said  
40 check valve, and pumping an amount of the working  
41 fluid from said pump through said check valve into  
42 said pressing piston device; and

43 e) repeating said steps a), b), c) and d) until a  
44 pressure of the working fluid in said pressing piston  
45 device reaches a prescribed pressure, thereby  
46 advancing a pressing piston of said pressing piston  
47 device so as to press the object.

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1 19. (new) The method according to claim 18, wherein said  
2 controlling of said pump in said step d) comprises applying  
3 a first electrical voltage to a first piezoelectric  
4 actuator element of said pump, said controlling of said  
5 pump in said step b) comprises disconnecting said first  
6 electrical voltage from said first piezoelectric actuator  
7 element, said controlling of said supply control valve in  
8 said step c) comprises applying a second electrical voltage  
9 to a second piezoelectric actuator element of said supply  
10 control valve, said controlling of said supply control  
11 valve in said step a) comprises disconnecting said second  
12 electrical voltage from said second piezoelectric actuator  
13 element, and said controlling of said discharge control  
14 valve in said step a) and said step c) comprises applying  
15 a third electrical voltage to a third piezoelectric  
16 actuator element of said discharge control valve.

1 20. (new) The method according to claim 18, further comprising,  
2 after completing said pressing of said object in said  
3 step e), a further step of electrically controlling said  
4 piezoelectrically actuated discharge control valve so as to  
5 be in an open state thereof, and discharging a quantity of  
6 the working fluid out of said pressing piston device  
7 through said discharge control valve to retract said  
8 pressing piston.

1     **21.** (new) The method according to claim 18, further comprising  
2         sensing the pressure of the working fluid in said pressing  
3         piston device with a pressure sensor, and terminating said  
4         step d) when said pressure sensed with said pressure sensor  
5         reaches said prescribed pressure.

[RESPONSE CONTINUES ON NEXT PAGE]

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